

**IN THE CLAIMS**

1. (previously presented) A non-compliant medical balloon, where the non-compliant medical balloon may be changed from a deflated state to an inflated state by increasing pressure applied to an interior surface of the balloon, said interior surface of the balloon having a predetermined longitudinal length, comprising:

a first fiber layer;

a second fiber layer over said first fiber layer such that the fibers of the first fiber layer and the fibers of the second fiber layer form an angle;

a binding layer that secures the first fiber layer to the second fiber layer so that the first and second fiber layers are restricted from substantial relative movement during inflation and deflation and the longitudinal length of the non-compliant medical balloon remains substantially unchanged when the balloon changes from a deflated state to an inflated state.

2. (original) The non-compliant medical balloon of claim 1, wherein said first fiber layer comprises inelastic fibers.

3. (original) The non-compliant medical balloon of claim 1, wherein said first fiber layer comprises a plurality of parallel first fibers.

4. (original) The non-compliant medical balloon of claim 1, further comprising an adhesive layer adhering to said first fiber layer.

5. (original) The non-compliant medical balloon of claim 1, wherein said second fiber layer comprises a plurality of parallel second fibers.

6. (original) The non-compliant medical balloon of claim 1, wherein said angle is substantially a right angle.

7. (original) The non-compliant medical balloon of claim 1, wherein said angle does not change when the balloon changes from a deflated state to an inflated state.

8. (original) The non-compliant medical balloon of claim 3, wherein said plurality of parallel first fibers are substantially parallel to the longitudinal axis of the balloon.

9. (original) The non-compliant medical balloon of claim 5, wherein said plurality of parallel second fibers are substantially transverse to the longitudinal axis of the balloon.

10. (original) The non-compliant medical balloon of claim 1, wherein said binding layer is a polymeric coating.
11. (original) The non-compliant medical balloon of claim 10, wherein said polymeric coating is formed of a polymer.
12. (original) The non-compliant medical balloon of claim 10, wherein said polymeric coating is formed of a copolymer.
13. (original) The non-compliant medical balloon of claim 3, wherein said parallel first fibers each have a thickness of about 0.0005 inch.
14. (original) The non-compliant medical balloon of claim 5, wherein said parallel second fibers each have a thickness of about 0.0005 inch.
15. (original) The non-compliant medical balloon of claim 5, wherein said parallel second fibers have a wind density of approximately 50 wraps per inch.
16. (currently amended) The non-compliant medical balloon of claim 1, wherein said angle is about ~~ten~~ eighty degrees.
17. (original) The non-compliant medical balloon of claim 1, further comprising a third fiber layer on said second fiber layer.
18. (new) A balloon as in claim 1, wherein said first fiber layer has first fibers; said second fiber layer has second fibers; said first fibers being oriented relative to said second fibers such that said first fibers are at an angle relative to said second fibers.
19. (new) The non-compliant medical balloon of claim 18, wherein said first fiber layer comprises inelastic fibers.
20. (new) The non-compliant medical balloon of claim 18, wherein said first fiber layer comprises a plurality of parallel first fibers.
21. (new) The non-compliant medical balloon of claim 18, further comprising an adhesive layer adhering to said first fiber layer.
22. (new) The non-compliant medical balloon of claim 18, wherein said second fiber layer comprises a plurality of parallel second fibers.
23. (new) The non-compliant medical balloon of claim 18, wherein said angle is substantially a right angle.
24. (new) The non-compliant medical balloon of claim 18, wherein said angle does not change when the balloon changes from a deflated state to an inflated state.

25. (new) The non-compliant medical balloon of claim 20, wherein said plurality of parallel first fibers are substantially parallel to the longitudinal axis of the balloon.

26. (new) The non-compliant medical balloon of claim 22, wherein said plurality of parallel second fibers are substantially transverse to the longitudinal axis of the balloon.

27. (new) The non-compliant medical balloon of claim 25, wherein said binding layer is a polymeric coating.

28. (new) The non-compliant medical balloon of claim 27, wherein said polymeric coating is formed of a polymer.

29. (new) The non-compliant medical balloon of claim 27, wherein said polymeric coating is formed of a copolymer.

30. (new) The non-compliant medical balloon of claim 20, wherein said parallel first fibers each have a thickness of about 0.0005 inch.

31. (new) The non-compliant medical balloon of claim 22, wherein said parallel second fibers each have a thickness of about 0.0005 inch.

32. (new) The non-compliant medical balloon of claim 22, wherein said parallel second fibers have a wind density of approximately 50 wraps per inch.

33. (new) The non-compliant medical balloon of claim 18, wherein said angle is about eighty degrees.

34. (new) The non-compliant medical balloon of claim 18, further comprising a third fiber layer on said second fiber layer.

35. (new) A non-compliant medical balloon, where the non-compliant medical balloon may be changed from a deflated state to an inflated state by increasing pressure applied to an interior surface of the balloon, said interior surface of the balloon having a predetermined longitudinal length, comprising:

first and second layers, each of polymer and each having at least one fiber therewithin;  
said first layer at least one fiber being oriented at an angle with respect to said second layer at least one fiber;

a binding layer that secures the first layer to the second layer so that the first and second layers are restricted from substantial relative movement during inflation and deflation; and

a tensile strength and orientation of at least one of said first and second layer at least one fibers being such that the longitudinal length of the non-compliant medical balloon remains substantially unchanged when the balloon changes from a deflated state to an inflated state.

36. (new) A balloon as in claim 35, wherein a tensile strength and orientation of at least the other of said first and second layer at least one fibers being such that the interior surface area of the non-compliant medical balloon remains substantially unchanged when the balloon changes from a deflated state to an inflated state.

37. (new) A non-compliant medical balloon, where the non-compliant medical balloon may be changed from a deflated state to an inflated state by increasing pressure applied to an interior surface of the balloon, said interior surface of the balloon having a predetermined longitudinal length, comprising:

a first fiber layer including first fibers which are parallel and whose orientations and mechanical properties impart a tensile strength of said first layer in a first direction;

a second fiber layer including second which are parallel whose orientations and mechanical properties impart a tensile strength of said second layer in a second direction;

said second fiber layer being positioned over said first fiber layer such that the fibers of the first and second directions form an angle with respect to each other, said angle lying in a plane parallel to said interior surface;

a binding layer that secures the first fiber layer to the second fiber layer so that the first and second fiber layers are restricted from substantial relative movement during inflation and deflation and the longitudinal length of the non-compliant medical balloon remains substantially unchanged when the balloon changes from a deflated state to an inflated state.